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Washington, D.C. 20231

Atty Dkt No. PP00362.102  
2302-0362

PATENT

FORM PTO-1449 (Modified)  
LIST OF PATENTS AND PUBLICATIONS  
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In the Application of  
RAPPUOLI et al.

Serial No.: 09/674,183

Art Unit: 1645

Filed: November 14, 2000

Examiner: S. Devi

Title: POLYEPITOPE CARRIER PROTEINS

U.S. PATENT DOCUMENTS

| Exam. Init. | Ref. Desig. | Document No. | Date              | Name             | Class | Sub Class | Filing Date |
|-------------|-------------|--------------|-------------------|------------------|-------|-----------|-------------|
| SD          | AA-1        | 4,882,317    | November 21, 1989 | Marburg, et al.  | 514   | 54        |             |
| SD          | AB-1        | 4,902,506    | February 20, 1990 | Anderson, et al. | 424   | 92        |             |

FOREIGN PATENT DOCUMENTS

| Exam. Init. | Ref. Desig. | Document No.   | Publication Date | Country or Patent Office | Class | Sub Class | Translation YES NO |
|-------------|-------------|----------------|------------------|--------------------------|-------|-----------|--------------------|
| SD          | AC-1        | EP 0 429 816 A | June 5, 1991     | PCT                      |       |           |                    |
| SD          | AD-1        | WO 96/03144    | February 8, 1996 | PCT                      |       |           |                    |
| SD          | AE-1        | WO 98/43677    | October 8, 1998  | PCT                      |       |           |                    |

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)

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|-------------|-------------|--|
| SD          | AF-1        | AN L.L. et al., "A multivalent minigene vaccine, containing B-cell, cytotoxic T-lymphocyte and Th epitopes from several microbes, induces appropriate responses in vivo and confers protection against more than one pathogen," <i>Journal of Virology</i> , 71(3)2292-2302 (1997) |

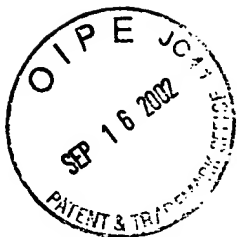
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| SD          | AG-1        | Christodoulides M. et al., "Immunization with a multiple antigen peptide containing defined B- and T-cell epitopes: production of bactericidal antibodies against group B Neisseria meningitidis," <i>Microbiology</i> , <u>140</u> (11):2951-2960(1994)   |
| SD          | AH-1        | De Velasco E. A. et al., "Synthetic peptides representing T-cell epitopes act as carriers in pneumococcal polysaccharide conjugate vaccines," <i>Infection and Immunity</i> , <u>63</u> (3):961-968(1995)  |
| SD          | AI-1        | Paradiso, Peter R. et al., "Novel approaches to the development of glycoconjugate vaccines with synthetic peptides as carriers," <i>Vaccine Res.</i> , <u>2</u> (4):239-48(1993)   |
| SD          | AJ-1        | Thomson S. A. et al., "Targeting a polyepitope protein incorporating multiple class II-restricted viral epitopes to the secretory/endocytic pathway facilitates immune recognition by CD4+ cytotoxic T lymphocytes: a novel approach to vaccine design," <i>Journal of Virology</i> , <u>72</u> (3):2246-2252 (1998) |

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| SD          | A1          | 4,695,624    | 22 September 1987 | Marburg et al. | 530   | 395       |             |
|             | A2          | 4,882,317    | 21 November 1989  | Marburg et al. |       |           |             |

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|             | B1          |              |                  |                          |       |           |                    |
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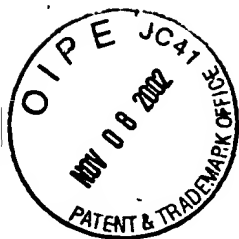
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|-------------|-------------|---|
| SD          | C1          | Agadjanyan et al., "Peptide mimicry of carbohydrate epitopes on human immunodeficiency virus", <i>Nature Biotechnol.</i> , 15:547-551, (1997) |

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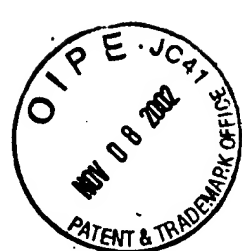
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| Exam. Init. | Ref. Desig. | Description   |
|-------------|-------------|---|
| SD          | C2          | Ahlers et al., "Construction of an HIV-1 Peptide Vaccine Containing a Multideterminant Helper Peptide Linked to a V3 Loop Peptide 18 Inducing Strong Neutralizing Antibody Responses in Mice of Multiple MHC Haplotypes after Two Immunizations", <i>J. of Immun.</i> , <u>150</u> (12),5647-5665,(1993). |
|             | C3          | Andreoni et al., "Vaccination and the Role of Capsular Polysaccharide Antibody in Prevention of Recurrent Meningococcal Disease in Late Complement Component-Deficient Individuals", <i>J. Infect. Dis.</i> , <u>168</u> :227-231,(1993).   |
|             | C4          | Anderson et al., "Antibody Responses to <i>Haemophilus influenzae</i> Type b and Diphtheria Toxin Induced by Conjugates of Oligosaccharides of the Type b Capsule with the Nontoxic Protein CRM", <i>Infect. Immun.</i> , <u>39</u> (1):233-238,(1983).   |
|             | C5          | Anderson et al., "Immunization of 2-month-old infants with protein-coupled oligosaccharides derived from the capsule of <i>Haemophilus influenzae</i> type b", <i>J. Pediatrics</i> , <u>107</u> :346-351,(1985).   |
|             | C6          | Anderson et al., "Immunogens Consisting of Oligosaccharides from the Capsule of <i>Haemophilus influenzae</i> Type b Coupled to Diphtheria Toxoid or the Toxin Protein CRM197", <i>J. Clin. Invest.</i> , <u>76</u> :52-59,(1985).  |
|             | C7          | Bixler et al., "Synthetic Peptide Representing a T-Cell Epitope of CRM197 Substitutes as Carrier Molecule in a <i>Haemophilus Influenzae</i> Type b (HIB) Conjugate Vaccine", <i>Advances in Exper. Med. Bio.</i> , <u>251</u> :175-180,(1989).   |
|             | C8          | Chang et al., "Anergy in Immature B Lymphocytes Differential Responses to Receptor-Mediated Stimulation and T Helper Cells", <i>J. Immun.</i> , <u>147</u> (3), 750-756, (1991).  |
| SD          | C9          | Constantino et al., "Development and phase 1 clinical testing of a conjugate vaccine against meningococcus A and C", <i>Vaccine</i> , <u>10</u> (10), 691-698, (1992).  |

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|-------------|-------------|--|
| SD          | C10         | Dick et al., "Glycoconjugates of Bacterial Carbohydrate Antigens", <i>Conjugate Vaccines</i> , <u>10</u> :48-114, (1989).  |
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|             | C12         | Goldblatt et al., "Role of Cell Wall Polysaccharide in the Assessment of IgG Antibodies to the Capsular Polysaccharides of <i>Streptococcus pneumoniae</i> in Childhood", <i>J. Infect. Dis.</i> , <u>166</u> :632-634, (1992).                        |
|             | C13         | Good et al., "Construction of Synthetic Immunogen: Use of New T-Helper Epitope on Malaria Circumsporozoite Protein", <i>Science</i> , <u>235</u> :1059-1062, (1987).   |
|             | C14         | Grandoff et al., "Effect of immunity to the carrier protein on antibody responses to <i>Haemophilus influenzae</i> type b conjugate vaccines", <i>Vaccine</i> , <u>11</u> (1):546-551, (1993).   |
|             | C15         | Grandoff et al., "Induction of Immunologic Memory in Infants Primed with <i>Haemophilus influenzae</i> Type b Conjugate Vaccines", <i>J. Infect. Dis.</i> , <u>168</u> :663-671, (1993).   |
|             | C16         | Hayward et al., "Induction of Plasma Cell Differentiation of Human Fetal Lymphocytes: Evidence For Functional Immaturity of t and b Cells", <i>J. Immun.</i> , <u>119</u> (4):1213-1217, (1977).   |
|             | C17         | Holmes et al., "The Biology of <i>Haemophilus influenzae</i> Type b Vaccination Failure", <i>J. Infect. Dis.</i> , <u>165</u> :5121-5128, (1992).  |
|             | C18         | Insel et al., "Oligosaccharide-Protein Conjugate Vaccines Induce and Prime for Oligoclonal IgC Antibody Responses to the <i>Haemophilus influenzae</i> b Capsular Polysaccharide in Human Infants", <i>J. Exp. Med.</i> , <u>163</u> :262-269, (1986). |
| SD          | C19         | Ishioka et al., "MHC Interaction and T Cell Recognition of Carbohydrates and Glycopeptides", <i>J. Immun.</i> , <u>148</u> :2446-2451, (1992).   |

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|-------------|-------------|---|
| SD          | C20         | Jennings et al., "Immunochemistry of Groups A, B, and C Meningococcal Polysaccharide-Tetanus Toxoid Conjugates", <i>J. Immunol.</i> , <u>127</u> :1011-1018, (1981).  |
|             | C21         | Kaliyaperumal et al., "Carrier-induced epitope-specific regulation and its bypass in a protein-protein conjugate", <i>Eur. J. Immunol.</i> , <u>25</u> :3375-3380, (1995).  |
|             | C22         | Konadu et al., "Synthesis, Characterization, and Immunological Properties in Mice of Conjugates Composed of Detoxified Lipopolysaccharide of <i>Salmonella paratyphi</i> A Bound to Tetanus Toxoid, with Emphasis on the Role of O Acetyls", <i>Infect. Immunol.</i> , <u>64</u> (7):2709-2715, (1996). |
|             | C23         | Konen-Waisman et al., "Self and Foreign 60-Kilodalton Heat Shock Protein T Cell Epitope Peptides Serve As Immunogenic Carriers for a T Cell-Independent Sugar Antigen", <i>J. Immunol.</i> , <u>154</u> :5977-5985, (1995).   |
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|             | C25         | Leclerc et al., "A synthetic vaccine constructed by copolymerization of B and T cell determinants", <i>Eur. J. Immunol.</i> , <u>17</u> :269-273, (1987).   |
|             | C26         | Lett et al., "Immunogenicity of Polysaccharides Conjugated to Peptides Containing T- and B-Cell Epitopes", <i>Infect. Immunol.</i> , <u>62</u> (3):785-792, (1994).   |
| SD          | C27         | Liptak et al., "Decline of pediatric admissions with <i>Haemophilus influenzae</i> type b in New York State, 1982 through 1993: Relation to immunizations", <i>J. Pediatrics</i> , <u>130</u> :923-930, (1997).   |

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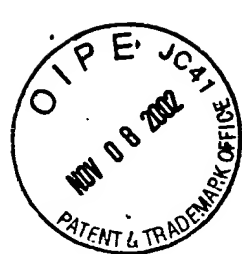
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|-------------|-------------|---|
| SD          | C28         | Lucas et al., "Functional Differences in Idiotypically Defined IgG1 Anti-Polysaccharide Antibodies Elicited by Vaccination with Haemophilus influenzae Type B Polysaccharide-Proline Conjugates", <i>J. Immunol.</i> , <u>154</u> :4195-4202, (1995). |
|             | C29         | McNamara et al., "Monoclonal Idiotope Vaccine Against <i>Streptococcus pneumoniae</i> Infection", <i>Science</i> , <u>226</u> :1325-1326, (1984).   |
|             | C30         | Marburg et al., "Bimolecular Chemistry of Macromolecules: Synthesis of Bacterial Polysaccharide Conjugates with <i>Neisseria meningitidis</i> Membrane Protein", <i>J. Am. Chem.</i> , <u>108</u> :5282-5287, (1986).                                 |
|             | C31         | Moxon et al., "The Role of Bacterial Polysaccharide Capsules as Virulence Factors", <i>Curr. Top. Microbiol. Immunol.</i> , <u>150</u> :65-85, (1990).  |
|             | C32         | Panina-Bordignon et al., "Universally immunogenic T cell epitopes: promiscuous binding to human MHC class II and promiscuous recognition by T cells", <i>Eur. J. Immunol.</i> , <u>19</u> :2237-2242, (1989).   |
|             | C33         | Robbins et al., "Prevention of Systemic Infections, Especially Meningitis, Caused by <i>Haemophilus influenzae</i> Type b", <i>JAMA</i> , <u>276</u> :1181-1185, (1996).  |
|             | C34         | Sad et al., "Bypass of carrier-induced epitope-specific suppression using a T-helper epitope", <i>Immunol.</i> , <u>76</u> :599-603, (1992).  |
|             | C35         | Santosham M., "Prevention of <i>Haemophilus influenzae</i> type b disease", <i>Vaccine</i> , <u>11</u> (1):552-557, (1993).   |
| SD          | C36         | Schneerson et al., "Preparation, Characterization, and Immunogenicity of Haemophilus Influenzae Type b Polysaccharide-Protein Conjugates", <i>J. Exp. Med.</i> , <u>152</u> :361-376, (1980).   |

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| 58          | C37         | Schneerson et al., "Quantitative and Qualitative Analyses of Serum Antibodies Elicited in Adults by <i>Haemophilus influenzae</i> Type b and Pneumococcus Type 6A Capsular Polysaccharide-Tetanus Toxoid Conjugates", <i>Inf. Immun.</i> , <u>52</u> (2):519-528, (1986). |
|             | C38         | Sidman et al, "Receptor-mediated inactivation of early B lymphocytes", <i>Nature</i> , <u>257</u> :149-151, (1975).   |
|             | C39         | Tunkel et al., "Pathogenesis and Pathophysiology of Bacterial Meningitis", <i>Clin. Microbio.</i> , <u>6</u> (2):118-136, (1993).   |
| 58          | C40         | Valmori et al., "Use of Human Universally Antigenic Tetanus Toxin T Cell Epitopes as Carriers for Human Vaccination", <i>J. Immunol.</i> , <u>149</u> :717-721, (1992).   |
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